

curta Prov.  
solitaria Rits.  
porterae Ckll., Mojave Desert.

#### ANTHOPHORULA Ckll.

coquilletti (Ashm.).

#### XYLOCOPA Latr.

californica Cr.  
orpifex Sm.  
varipuncta Patt.  
fimbriata Fabr.

#### CENTRIS Fabr.

hoffmanseggiae Ckll.

#### PSITHYRUS Lep.

californicus (Cr.).

#### BOMBUS Latr.

californicus Sm.  
centralis Cr. (? = *flavifrons* Cr.).  
proximus howardii (Cr.).  
occidentalis Greene.  
nigrocinctus Prov.  
crotchii Cr.  
morrisoni Cr.  
nevadensis Cr.  
fervidus Fabr.  
edwardsii Cr.

#### APIS L.

mellifera L. (*mellifica* L.), introduced.

## LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE.—XL.

BY HARRISON G. DYAR, WASHINGTON, D. C.

*Lycia cognataria* Guenée. The egg has been noticed by A. P. W. Cramer and there are several good descriptions of the mature larva extant, besides a poor figure, published by Lintner. The larval stages have not been before noticed. I am indebted to Mr. H. H. Lyman of Montreal for the eggs, which hatched before arrival. The larvae fed readily on maple, but are, apparently, rather general feeders.

EGG. Elliptical, roundedly and distinctly flattened above and below, ends rounded and much alike, no distinct flattening of micropylar end nor marked depression of the other end. Reticulations distinct, in longitudinal rows, forming waved ridges, the cross striae being a little weaker than the longitudinal lines. Reticulations confused at the ends, and less strongly marked. Size .6 × .4 × .3 mm. "Color bright green. Laid loose in large numbers" (Lyman).

STAGE I. Head rounded, bilobed, full, blackish over the lobes, dull sordid on clypeus and mouth; sutures of clypeus deep, well marked; width about .3 mm. Body normal, moderately robust, whitish, becoming sordid green from the food; a dull purple, broad, subdorsal band, obscurely joined intersegmentally on the abdomen and completely so on joints 10-13, separate on thorax; a broad, diffuse, dull purplish ventral band, later resolving into a series of medioventral patches. Thoracic feet black, abdominal ones dark outwardly. Tubercles black, small, normal; setae inconspicuous. Cervical shield colored like the body, undifferentiated, but anal plate and anal leg shields triangular, broadly blackish edged.

STAGE II. Head rounded bilobed, squarish, a depression at apex of clypeus; width .5 mm. Body moderately robust, normal, subventral fold rather prominent. Greenish and brown, mottled, nearly all green along the subventral fold, venter and dorsum more brown, especially about the feet. Head reddish brown, reticulate in lighter, ocelli black; feet dark. Anal feet and shield reddish, resembling the head. No plates; tubercles obsolete.

STAGE III. Head high bilobed, flat before, lobes rounded, projecting above the dorsum, pale yellowish sordid, thickly mottled with brown; width .8 mm. Body rather robust, normal, venter somewhat flattened. Pale yellowish, this color showing on subventral fold but elsewhere thickly mottled in dead leaf brown. Thoracic feet pale greenish, foot of joint 10 dark brown outwardly. Anal shield lighter brown, resembling the head. A white patch on each side of clypeus and across it more faintly.

STAGE IV. Head high bilobed, flat before, lobes subconic, projecting rather widely; brown, mottled in white before and also a little with smoky, a blackish arc at apex of clypeus; sides less strongly mottled; width 1.3 mm. Body rather short, moderately robust, normal. Smooth green, overlaid with a brown shade, most distinct at the contracted ends; joints 2-4 and 10-13 slightly shining, without defined markings, only the faintest traces of pale lines showing at the ends.

STAGE V. Head high bilobed as before, red-brown, mottled with white, which forms curved streaks on the faces of the lobes; vertex behind and sides at neck dark shaded; width 2 mm. Body cylindrical with a process on joint 9 bearing tubercle iii, rounded and cushion-like; no cervical shield, anal plate triangular, anal foot plates large, elongate, with stout anal prongs. Light red-brown to dark sordid brown, irregularly shaded, darker on the anterior halves of the segments, darkest ventrally. Feet dark at base. Setae short, stiff, black, from indistinct tubercles.

STAGE VI. Head high bilobed, flattened before, lobes forming low cones, widely separated by a broad notch; clypeus rather high; surface shagreened; wood brown, mottled and shaded with dark brown, darkest in a small patch at apex of paraclypeus; width 3.6 mm. Body cylindrical, stout, joint 2 slightly collared at the anterior edge and angled subdorsally, the angles dark and preceded by pale marks which are exposed or concealed according to the position of the larva; third pair of thoracic feet usually extended while the first two pair are appressed; a slight ventral prominence on joints 6, 7, and 8 bearing small spines; a large lateral conical prominence on joint 9 above and before the spiracle with black spines; a low rounded collared hump on joint 12, marked in pale subdorsally. Feet normal, a white subventral fringe between those of joints 10 and 12; anal plate and leg shields large, gray. Body green, more or less marked with gray and brown, sometimes mostly brown. The gray occurs in segmentary bands, darkest on joints 9 and 12, the abdominal feet gray. Dorsum brown shaded. Thoracic feet light reddish with nearly black shading at the bases. Spiracles reddish. Skin with many secondary granules, mostly white, but becoming black spines on the humps and clavate, capitate papillae in the subventral fringe of joints 10-12. Primary setae pointed, black, from small black tubercles, normal except that about five setae represent tubercle vii.

The larvae transformed to large red-brown pupae in the earth and hibernated in this stage.